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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/319,678	08/16/1999	ALBERT ESCHENMOSER	514485-3729	3438

34263 7590 09/11/2003

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EXAMINER

TRAN, MY CHAU T

ART UNIT	PAPER NUMBER
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1639

DATE MAILED: 09/11/2003

29

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/319,678

Applicant(s)

ESCHENMOSER ET AL.

Examiner

My-Chau T. Tran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 29-62 is/are pending in the application.
- 4a) Of the above claim(s) 30,32-42,44,45,53-59 and 62 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 29,31,43,46-52,60 and 61 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 August 1999 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 28.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION

Note: The examiner for your application in the PTO has changed. However, the Group and/or Art Unit location of your application in the PTO is remained the same, which is Group Art Unit 1639.

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 6/18/03 has been entered.

2. Applicant's amendment filed 9/16/2002 in Paper No. 23 is acknowledged and entered. Claims 1-28 are canceled by the amendment. Claims 29-62 are added by the amendment.

3. Applicant's amendment filed 6/20/2003 in Paper No. 27 is acknowledged and entered. Claim 29 is amended by the amendment.

4. Claims 29-62 are pending.

Election/Restrictions

5. Applicant's election with traverse in Paper No. 20 the species of supramolecular nanosystem is the structure of figure 3 is acknowledged. The supramolecular nanosystem

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structure of figure 3 is the pentopyranose monomers comprising pyrido[3,2-h]quinazolin-2(1)-one as a chelating agent functional group directly coupled to the pentopyranose. The pentopyranose monomers are in both the D and the L configurations. No nucleobases are present.

6. Claims 30, 32-42, 44-45, 53-59, and 62 withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in Paper No. 16.

7. Claims 29, 31, 43, 46-52, and 60-61 are treated on the merit in this Office Action.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

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invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 29, 31, 43, 46-52, and 60-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goodnow, Jr. et al. (US Patent 5,780,607) and Alivisatos et al. (*Nature*, 8/15/1996, 382:609-611).

Alivisatos et al. disclose a nanocrystal assembly comprising attachment of an inorganic nanocrystal (functional unit) to either the 3' or 5' termini of the oligonucleotide codon (second oligomer) wherein the oligonucleotide codon is hybridized (pairing non-covalently) to a DNA template (first oligomer) to form head-to-head dimers, head-to-tail dimers, and trimers (pg. 610, figure 1). The length of the oligonucleotide codon comprises 18 monomer units and the length of the DNA template comprises either 37 or 56 monomer units (pg. 610, lines 10-14 and figure 1).

The nanosystem of Alivisatos et al. does not expressly disclose that the oligomers are pentopyranose oligomers.

Goodnow, Jr. et al. disclose oligomers comprising pyranosyl nucleotide monomer units connected by amide linkages (col. 2, lines 48-57). These oligomers provide the advantages of stability, water solubility, and nonspecific protein binding associated with phosphorothioates.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to include oligomers that are pentopyranose oligomers as taught by Goodnow, Jr. et al. in the nanosystem of Alivisatos et al. One of ordinary skill in the art would have been motivated to include oligomers that are pentopyranose oligomers in the nanosystem of

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Alivisatos et al. for the advantage of providing stability, water solubility, and nonspecific protein binding associated with phosphorothioates since both Alivisatos et al. and Goodnow, Jr. et al. disclose the method of hybridization of the oligomers (Alivisatos: pg. 610, figure 1; Goodnow, Jr.: col. 34, Example 7).

Withdrawn Rejections

11. The previous rejections 35 USC 112, first paragraph (written description), for claims 29, 31, 43, 46-52, and 60-61 have been withdrawn in view of applicant's amendments of claim 29.
12. The previous rejections 35 USC 112, first paragraph (new matter), for claims 29, 31, 43, 46-52, and 60-61 have been withdrawn in view of applicant's amendments of claim 29.
13. The previous rejections under 35 USC 102(a) as being anticipated by Mirkin et al. Nature 382:607-609 (August 1996) for claims 29, 31, 43, 46-52, and 60-61 have been withdrawn in view of applicant's amendments of claim 29.
14. The previous rejections under 35 USC 102(a) as being anticipated by Alivisatos et al. Nature 382:609-611 (August 1996) for claims 29, 31, 43, 46-52, and 60-61 have been withdrawn in view of applicant's amendments of claim 29.

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Response to Arguments

15. Applicant's arguments with respect to claims 29, 31, 43, 46-52, and 60-61 have been considered but are moot in view of the new ground(s) of rejection.

Allowable Subject Matter

16. The following is a statement of reasons for the indication of allowable subject matter: The elected species of the supramolecular nanosystem structure of figure 3 is the pentopyranose monomers comprising pyrido[3,2-h]quinazolin-2(1)-one as a chelating agent functional group directly coupled to the pentopyranose. The pentopyranose monomers are in both the D and the L configurations. The structure of the presently claimed elected species of the supramolecular nanosystem is not taught or suggested by the closest prior art of Goodnow, Jr. et al. (US Patent 5,780,607) and Alivisatos et al. (*Nature*, 8/15/1996, 382:609-611).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to My-Chau T. Tran whose telephone number is 703-305-6999. The examiner is on Increased Flex Schedule and can normally be reached on Monday: 8:00-2:30; Tuesday-Thursday: 7:30-5:00; Friday: 8:00-3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew J. Wang can be reached on 703-306-3217. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9306 for regular communications and 703-872-9307 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1123.

mct

September 7, 2003


PADMASHRI PONNALURI
PRIMARY EXAMINER